**Polynomial Long Division**

1. **Long Division (sometimes known as Synthetic Division):**

Work out 654 9 by long division:



Therefore 654 9 = 72 remainder 6, or 72 .

1. **Polynomial Long Division**

Example 1: Divide by .

1. Start by setting up the division like you would for a synthetic division:



1. Divide the first term of the dividend(which is the in ) by the first term

of the divisor (which is the in the ). The answer to this division problem is your quotient, which will be written above the line in your division bracket.



1. Write the product of the quotient and the divisor below the dividend, in order to subtract: { }



4. Work out the remainder and then bring down the next term: { }



1. Repeat until every term in the dividend has been divided by the divisor:

{ , so -12 is the next term in your quotient, and the product of -12 and is }



1. Work out the remainder: { }



Therefore or

= and remainder 112

= +

Example 2: Divide by .



Delta: Exercise 26.1 page 237 Q1-10.